**TAPS Plan for Focused Assessment of Science**

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| **Topic:** Properties and Changes of Materials | Year 5  Age 9-10 | Title: Insulation layers |
| **Working Scientifically**  Logo for doing strand of Working Scientifically**Do:** Use test results to make predictions to set up further comparative and fair tests | **Concept Context**  Compare everyday materials on basis of their thermal conductivity.  Give reasons, based on evidence from comparative and fair tests, for the particular uses of everyday materials. | |
| **Assessment Focus**   * Can children carry out an investigation to test a hypothesis? | | |
| **Pre-activity** *Today we are going to be packaging technologists.*  [TAPS pyramid logo for Pupil box 1](https://taps.pstt.org.uk/active-pupils/)You want to see which cup will keep your tea warm for longer. Show different cups of hot water, e.g. paper cup, stacked paper cups, thermos mug. Measure the temperature of the water, repeat after about one hour (e.g. at the beginning and end of lunchtime).  **Activity**  Use the results of the pre-activity to make predictions about insulation (e.g. a good insulator has more layers / traps air / made of….). Provide a collection of different materials and invite the children to discuss their ideas about which might be good for keeping the drink warm. The children could order the materials according to which will be best insulators or select one to test for layering and record their predictions, giving reasoning based on the previous test results. Children plan and carry out an investigation to test their predictions.  **Adapting the activity**  **Photo of cups with 0, 1, 2 and 3 layers of kitchen rollSupport:** support the children with making choices about how to plan and carry out the test, e.g. by exaggerating ‘unfairness’, suggesting the use of a thermometer/probe, worksheet for structure.  **Extension:** Children to predict/choose which alternative material could insulate their beaker better, thinking about properties of the materials.  **Other ideas:** Which materials will insulate a hot baked potato / ice cube?  **Questions to support discussion**   * Where have you seen things insulated? * What makes a good insulator? What other materials could be used as thermal insulators? * What will you measure? * How will you make it a fair test? * Which material/layers do you predict will keep the water warmest for longest? Why? * What evidence from the first test supports your prediction? | | |
| **Assessment Indicators**  **Not yet met:** Suggests which insulators might be best but this is not linked to evidence from the first test. Needs support to carry out fair test  **Meeting:** Uses evidence from the first test to support their prediction. Carries out a fair test independently. From own findings identifies which material is the best insulator, *e.g. this one because it took longer to cool.*  **Possible ways of going further:** Compares own data with the original hypothesis & suggests reasons for similarities and differences, including any anomalies, *e.g. this one took longer to cool because....* | | |

[TAPS pyramid logo for Pupil box 1](https://taps.pstt.org.uk/active-pupils/) Pupil box 1 - identify existing ideas. See TAPS pyramid for more examples.